IN THE CLAIMS:

1. (Withdrawn) An isolated and purified nucleic acid comprising a sequence encoding a protein selected from the group consisting of SEQ ID NOs: 2,3 and 34.

2. (Withdrawn) The nucleic acid sequence of Claim 1, wherein said sequence is operably linked to a heterologous promoter.

3. (Withdrawn) The nucleic acid sequence of Claim 1, wherein said sequence is contained within a vector.

4. (Withdrawn) The nucleic acid sequence of Claim 3, wherein said vector is within a host cell.

5. (Withdrawn) An isolated and purified nucleic acid sequence that hybridizes under conditions of low stringency to a nucleic acid selected from the group consisting of SEQ ID NO:1 and 33.

6. (Withdrawn) The nucleic acid sequence of Claim 5, wherein said sequence encodes a protein that activates NF-κB.

7. (Withdrawn) A vector comprising the nucleic acid sequence of Claim 5.

8. (Withdrawn) A host cell comprising the vector of Claim 7.

9. (Withdrawn) The host cell of Claim 8, wherein said host cell is located in an organism selected from the group consisting of a plant and an animal.

10. (presently amended) A protein encoded by a nucleic acid selected from the group consisting of SEQ ID NOs:1 and 33~~ and variants thereof that are at least 80% identical to SEQ ID NOs: 1 and 33~~, wherein said protein has at least one activity of Nod2.

11. (original) The protein of Claim 10, wherein said activity is activation of NF-κB.

12. (original) The protein of Claim 10, wherein said activity is binding to RICK.

13-14. (Canceled)

15. (Withdrawn) A method for producing variants of Nod2 comprising:

a) providing a nucleic acid sequence selected from the group consisting of SEQ ID NOs:1 and 33;

b) mutagenizing said nucleic acid sequence; and

c) screening said variant for Nod2 activity.

16. (Withdrawn) A nucleic acid encoding Nod2, wherein said Nod2 competes for binding to RICK with a protein encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NOs:1 and 33.

17. (Withdrawn) A composition comprising a nucleic acid that inhibits the binding of at least a portion of a nucleic acid selected from the group consisting of SEQ ID NOs:1 and 33 to their complementary sequences.

18. (Withdrawn) A polynucleotide sequence comprising at least fifteen nucleotides capable of hybridizing under stringent conditions to the isolated nucleotide sequence of Claim 5.

19. (Withdrawn) A method for detection of a polynucleotide encoding Nod2 protein in a biological sample suspected of containing said polynucleotide encoding Nod2, comprising the step of hybridizing the polynucleotide sequence of Claim 12 to nucleic acid of said biological sample to produce a hybridization complex.

20. (Withdrawn) The method of Claim 19, further comprising the step of detecting said hybridization complex, wherein the presence of said hybridization complex indicates the presence of a polynucleotide encoding Nod2 in said biological sample.

21. (Withdrawn) The method of Claim 20, wherein prior to said hybridization, said nucleic acid of said biological sample is amplified.

22. (Withdrawn) A method for screening compounds for the ability to alter Nod2 activity, comprising:

a) providing:

i) a first polypeptide sequence comprising at least a portion of Nod2;

ii) a second polypeptide sequence comprising at least a portion of a protein known to interact with Nod2; and

iii) one or more test compounds;

b) combining in any order, said first polypeptide sequence comprising at least a portion of Nod2, said second polypeptide sequence comprising at least a portion of a protein known to interact with Nod2, and said one or more test compounds under conditions such that said first polypeptide sequence, said second polypeptide sequence, and said test compound interact; and

c) detecting the presence or absence of an interaction between said polypeptide sequence comprising at least a portion of Nod2 and said polypeptide sequence comprising at least a portion of a protein known to interact with Nod2.

23. (Withdrawn) The method of Claim 22, wherein said first polypeptide sequence is selected from the group consisting of SEQ ID NOs: 2-17 and 34.

24. (Withdrawn) The method of Claim 22, wherein said second polypeptide comprises RICK.

25. (original) A purified polypeptide selected from the group consisting of SEQ ID NOs:2, 3, and 34.

26. (Withdrawn) A compound capable of inhibiting the binding of a Nod2 to a RICK polypeptide.

27. (new) The protein of Claim 10, wherein said nucleic acid is operably linked to a heterologous promoter.

28. (new) The protein of Claim 10, wherein said nucleic acid is contained within a vector.

29. (new) The protein of Claim 28, wherein said vector is within a host cell.